

Quarterly Report
July 1, 2004 to September 30, 2004

Project Title

Fish Passage in Montana Culverts Phase II – Passage Goals

Principal Investigators

Dr. Joel Cahoon, P.E., Ph.D.
Civil Engineering Department

Dr. Thomas McMahon, Ph.D.
Fish and Wildlife Science

Otto Stein, Ph.D.
Civil Engineering Department

Jarrett Barber
Math and Statistics

Research Assistants

Jesse Patton, Civil Engineering

TBA, Fish and Wildlife Science

Introduction

This progress report covers work completed between July 1, 2004 and September 30, 2004. This is the first quarterly report since the official start date of the project, August 1, 2004. Work on the project during this period has been primarily devoted to student recruitment, literature review and equipment selection.

Project Objective

Culverts are a common and often cost effective means of providing transportation intersections with naturally occurring streams or rivers. Fish passage and fish habitat considerations are now typical components of the planning and design of waterway crossings. Many culverts in Montana span streams that support diverse fisheries. The health of these fisheries is an essential element of a recreational industry that draws hundreds of thousands of visitors to Montana annually. Transportation system planners, designers and managers recognize that fish passage through Montana's culverts is a concern. However, there is much contention concerning the impact that a culvert can have on a fishery. Recent basin-wide studies in Montana (Phase I of this project - final report in November 2004) indicate that the tools that some planners and designers promote for forecasting fish passage concerns may be overly conservative. This is reflected in the diversity of fish passage goals that are being considered by state agencies in the Northwest. Some managers contend that all culverts should pass all fish at all times, whereas others suggest that this is an unrealistic criterion, particularly during high flow events. Which species, life stages, and how many individuals must have fish passage access for how long, are questions that are often brought forward during discussions on the design and retrofitting of culverts to accommodate fish passage concerns. *The problem is that for fish species and settings in Montana, the timing and*

number of fish that must pass a culvert to maintain viable species diversity in the watershed is unknown.

Progress

Personnel We have recruited Jesse Patton to begin work as a Research Assistant on the project. The project will serve as the focal point for Jesse's thesis as he pursues a Master of Science Degree in Civil Engineering. A nationwide announcement for a fisheries graduate student was sent out in early September, and we have already received applications from several strong candidates. We will begin interviewing prospective candidates in mid October with the intent of the student being on board by January 1, 2005. We also welcome Jarrett Barber to the fish passage team at MSU, he is a new faculty member in the Math and Statistics Department.

Equipment We have met with Dr. Bob Gresswell, formerly with the US Geologic Survey at Oregon State University, where he conducted long term, large scale studies on movement of cutthroat trout in Oregon streams using PIT tags and fixed antennas. In that study, Texas Instruments half-duplex PIT tags were used in combination with antennas built in-house. Bob found the detection distance of PIT tags using this system was increased over traditional off-the-shelf full duplex PIT tags, which are more sensitive, but have reduced detection distance. Since detection distance is an important factor in our culvert studies, we are further exploring which system might be most suitable for our needs.

Site Selection We have made arrangements to meet with Pat Byorth with the Montana Department of Fish, Wildlife and Parks to discuss potential sites. There is a strong chance that some of the sites we select will be revisits to sites studies in 1989 by Belford and Gould. Four of their sites were in the watershed we will be working in, and there is interest in looking at changes in the last ten years or so at those sites.

Future

In the next few months we will continue with site selection and student recruitment and equipment development.

Budget

We have expended two months of stipend for one research assistant – in line with planned expenditures. In the next quarterly report, after more expenditures have occurred, we will begin using a traditional graphic reporting scheme to compare planned with actual expenditures.